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Perturbation theory of magnetic properties and relativistic corrections based on the Lévy-Leblond equation

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Abstract

Starting from the Lévy-Leblond equation, which is the four-component non-relativistic limit of the Dirac equation, a direct perturbation theory of magnetic properties and relativistic corrections is formulated. Furthermore, operators and matrix elements are derived that occur when the nuclei of the molecule are described by Gaussian charge distributions and Gaussian magnetic dipole distributions instead of point charges and magnetic point dipoles.

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